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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,901	01/08/2002	John Stauffer	004860.P2753	5806

7590 04/11/2005
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EXAMINER

TUNG, KEE M

ART UNIT	PAPER NUMBER
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2676

DATE MAILED: 04/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/042,901	STAUFFER ET AL.	
	Examiner	Art Unit	
	Kee M Tung	2676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 41-46 is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>12/10/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment filed on 12/10/04 has been considered in preparing this Office action.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-6, 8-14, 16-22, 24-30, 32-38 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al (6,658,564 hereinafter "Smith") in view of Milot et al (6,437,788 hereinafter "Milot").

As per claim 1, Smith teaches a computerized method of virtualizing graphics resources (Fig. 1) comprising a graphics kernel (Fig. 3, 42) receiving an allocation request for a graphics resource from a graphics client (such as, application programs); allocating the graphics resource to the client (col. 6, lines 6-15); returning an address for the graphics resource to the graphics client (by using resource manager, col. 6, line 6 to col. 7, line 4 and col. 10, lines 29-48. It is noted that Smith may not use the same words as present claims, however, in order to tell the graphics client the graphics resource has been allocated, those skilled in the art will realize that there is an address or indicator to tell the graphics client where the graphics resources located.); managing the graphics resource (by resource manager). However, Smith fails to explicitly teach or suggest receiving a command from the graphics client specifying the address. This

is what Milot teaches. Milot teaches a computer graphics system (Figs. 1 and 4) having a method of virtualizing graphics resources (such as, a graphics adapter 20 includes a bus interface 21, rasterizer 22, frame buffer 23 and texture memory 30) by operating system (abstract and col. 1, lines 45-53, col. 2, lines 35-36, col. 4, lines 18-28) comprising: receiving, by the graphics kernel (RCM 34 and device driver 35), an allocation request for a graphics resource (graphics adapter 20) from a graphics client (special purpose thread 36); allocating the graphics resource to the graphics client (col. 5, lines 14-39); returning an address for the graphics resource to the graphics client (the "address" is an indicator that tells the special purpose thread 36 that the graphics resource (ie, the address location in the shared memory) is ready to take over); receiving a command from the graphics client specifying the address (col. 5, lines 14-39, particular in lines 21-29; the "address" is the called back information (such as, by texture management, saves texture memory) from the special purpose thread 36); managing the graphics resource (col. 5, lines 3-8). Milot further teaches to improve graphics context-switching (when conflict occurs, the high priority thread take over the resource from lower priority thread by interrupting the processing and then saves the states of lower priority thread and after the higher priority thread finished processing, then restores the states of display adapter of the lower priority thread) in graphics display management for computer systems in which the graphics adapter is virtualized (col. 2, lines 25-29). It would have been obvious to one of ordinary skill in the art at the time the present invention was made to combine the teachings of virtualized graphics adapter of Milot into the system or method of Smith in order to more efficiently utilize the

shared resources among the plurality of clients. Therefore, at least claim 1 would have been obvious.

As per claims 2 and 3, Smith further teaches determining if the graphics resource is available (col. 6, lines 6-8) and paging current data associated with the graphics resource to a backing store if the graphics resource is not available (col. 7, line 57 to col. 8, line 27 and col. 10, lines 29-48).

As per claims 4 and 5, Smith teaches the paging criteria is selected from the group consisting of a type of graphics resource, a priority, and a paging algorithm (col. 7, line 57 to col. 8, line 27).

As per claim 6, Smith teaches detecting and resolving the conflict if the graphics resource has been reused (such as, interrupt handling, col. 8, lines 10-15).

As per claim 8, Smith teaches recording information about the graphics resource in an entry in a virtualization map for use in allocating and managing graphics resources (col. 8, lines 27-44).

Claims 9-14 and 16 are similar in scope to claims 1-6 and 8, and thus are rejected under similar rationale.

Claims 17-22 and 24 are similar in scope to claims 1-6 and 8, and thus are rejected under similar rationale.

Claims 25-30 and 32 are similar in scope to claims 1-6 and 8, and thus are rejected under similar rationale.

Claims 33-38 and 40 are similar in scope to claims 1-6 and 8, and thus are rejected under similar rationale.

Double Patenting

4. Claims 7, 15, 23, 31, and 39 are objected to under 37 CFR 1.75 as being a substantial duplicate of claims 41-45 (Dependent claims 7, 15, 23, 31 and 39 have been rewrote to as independent claims 41-45). When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Allowable Subject Matter

5. Claims 41-46 are allowed.

Response to Arguments

6. Applicant's arguments with respect to rejected claims have been considered but are moot in view of the new ground(s) of rejection.

The rejection has been changed in order to fully considered applicant's argument.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kee M Tung whose telephone number is 571-272-7794. The examiner can normally be reached on Tuesday - Friday from 5:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2676

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kee M Tung
Primary Examiner
Art Unit 2676